REMARKS/ARGUMENTS

Rejection under 35 U.S.C. §103(a)

Claims 16 and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over European Patent No. 458,502 (herein "EP '502") and PCT Publication No. 96/12751 (herein "the PCT Publication") in view of Schutyser, et al., U.S. Patent No. 5,821,305 (herein "Schutyser, et a.") and Japanese Patent Nos. 9-25349 (herein "JP '349") and 9-194610 (herein "JP '610") and Soviet Union Patent No. 448,742 (herein "SU '742"). Applicants believe that the claims are patentable over the cited references for the following reasons.

The problem which the present invention seeks to solve is clearly set out in the Specification in Page 7, lines 27-32 to Page 8, lines 1-5 of the present application. Namely, the provision of an epoxy resin composition for an electrical laminate that may be used in existing manufacturing equipment for manufacturing prepregs and printed circuit boards with a decreased dielectric constant, without sacrificing the important parameter of Tg.

The problem is solved, in accordance with the present invention, by the selection of:

(i) the specific crosslinker,

(ii) in an amount of 40 parts to 150 parts per 100 parts of polyepoxide, and

(iii) the specific inhibitor.

All three of the above features are necessary, in order to achieve the desired improvement in dielectric constant, without an adverse effect on Tg.

The Examples in the present application also demonstrate a significant improvement in decomposition temperature Td for the claimed composition, as compared with compositions using conventional crosslinkers. Decomposition temperature is particularly important as the electronics industry moves towards lead-free solders, which have a much higher melting point than lead-containing solders. It is generally known to those skilled in the art that any laminate with a Td less than 310

°C is unsuitable for use with lead-free solders, and in practice a Td of at least 350 °C is generally recommended.

The improved results achieved in accordance with the present invention are clearly demonstrated by a comparison of Example 3, in Table II, of the present application, with Comparative Example 1. Comparative Example 1 employs a conventional dicyandiamide ("DICY") crosslinking agent. Example 3 employs a styrene/maleic anhydride copolymer as the crosslinker, in accordance with the present invention.

It can be seen from Table II that the dissipation factor Df of Example 3 (0.009) is significantly lower than that of Comparative Example 1 (0.025). The Tg value (175 °C), however, is significantly higher than that of Comparative Example 1 (130 °C). The surprising properties of the particular combination in accordance with the present invention is thus clearly demonstrated by the Examples.

The closest prior art reference, in the light of the technical problem to be solved, is EP '502. EP '502 discloses an epoxy resin composition comprising a cure inhibitor and crosslinker. DICY is mentioned as a possible crosslinker. The distinction therefore of the claims as presently submitted over the disclosure of EP '502 is the use of a different crosslinker (a copolymer of an ethylenically unsaturated anhydride and a vinyl compound), in an amount of from 40 parts to 150 parts per hundred parts of polyepoxide. Although such crosslinkers are known as such, there is no suggestion in EP '502, or in any of the other cited references, that the choice of such a crosslinker, in the amount specified, and in conjunction with a cure inhibitor, can give rise to epoxy resin compositions having a desirably low dielectric constant, with no adverse effect on Tg.

Accordingly, the present invention as claimed is not only novel, but also inventive in relation to EP '502. None of the other cited references, alone, or in combination with EP '502, are any more relevant than the disclosure of EP '502 to the question of obviousness.

For example, there is no motivation or suggestion in the EP '502 or the PCT Publication, to combine its teachings with the teachings of Schutyser, et al., JP

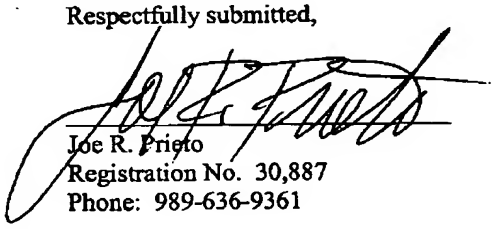
JP '349, JP '610, or SU '742 to arrive at a combination of a specific amount of SMA crosslinker with the other components of the claimed composition such as a complex of a catalyst and the cure inhibitor, to obtain the unexpected results as discussed above.

Nevertheless, even if such combination was made, the combined teachings of the cited references would not result in the specific combination of components as claimed in the present invention including the specific crosslinker with the complex of a catalyst, cure inhibitor and polyepoxide; and the specific amounts of the specific crosslinker claimed in the claims of the present application.

Claim 16 and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Schutyser, et al., JP '349 and JP '610 in view of EP '502 and the PCT Publication. For the same reasons described above, this combination of references does not make Claims 16 and 17 unpatentable. Again, it is not obvious to one skilled in the art to simply combine the complex catalyst and cure inhibitor at the appropriate molar ratios and with the amounts of the crosslinker to provide Applicants' invention as claimed.

In view of the above, Applicants urge that the pending Claims of the present application are patentably distinct over the cited prior art. Applicants respectfully request reconsideration of the rejections and an early notice of allowance in the present application.

Respectfully submitted,



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